Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. cancelled (~~Withdrawn~~) A method of manufacturing chalcogenide memory in a semiconductor substrate comprising the steps of:

forming a N+ epitaxy layer on the semiconductor substrate;

forming a N- epitaxy layer on the N+ epitaxy layer;

forming a first shallow trench isolation (STI) in the N+ and N- epitaxy layers to isolate a predetermined word line region;

forming a second STI in the N- epitaxy layer to isolate a predetermined P+ doped region;

forming a dielectric layer on the N- epitaxy layer;

patterning the dielectric layer to form a first opening and performing a N+ doping on the N- epitaxy layer via the first opening such that a N+ doped region is formed in the N- epitaxy layer and connected to the N+ epitaxy layer;

patterning the dielectric layer to form a second opening and performing a P+ doping in the N- epitaxy layer such that a P+ doped region is formed;

forming contact plugs in the first opening and the second opening respectively; and

forming an electrode on each contact plug, wherein the electrode includes a lower electrode, a chalcogenide layer and an upper electrode.

2. cancelled (~~Withdrawn~~) The method as recited in claim 1, wherein the N+ epitaxy layer has a thickness of 400 to 600 angstroms.

3. cancelled (~~Withdrawn~~) The method as recited in claim 1, wherein the N- epitaxy layer has a thickness of 800 to 1200 angstroms.

4. cancelled (~~Withdrawn~~) The method as recited in claim 1, wherein the first STI is formed in the N+ epitaxy layer and the N- epitaxy layer.

5. cancelled (~~Withdrawn~~) The method as recited in claim 1, wherein the first STI is formed by a dry or wet etching.

6. cancelled (~~Withdrawn~~) The method as recited in claim 1, wherein the second STI is formed by a dry or wet etching.

7. cancelled (~~Withdrawn~~) The method as recited in claim 1, wherein the N+ doping is accomplished by implanting arsenic or phosphorus.

8. cancelled (~~Withdrawn~~) The method as recited in claim 7, wherein the N+ doping comprises a dosage between 1015 and 2 x 1016 atoms/cm2 and energy between 10 and 30 keV.

9. cancelled (~~Withdrawn~~) The method as recited in claim 1, wherein the P+ doping is accomplished by implanting boron.

10. cancelled (~~Withdrawn~~) The method as recited in claim 9, wherein the P+ doping further comprising a dosage between 1015 and 1 x 1016 atoms/cm2 and energy between 1 and 3 keV.

11. cancelled (~~Withdrawn~~) The method as recited in claim 1, wherein the dielectric layer comprises tetra-ethyl-ortho-silicate.

12. cancelled (~~Withdrawn~~) The method as recited in claim 1, wherein the dielectric layer has a thickness of 2000 to 3000 angstroms.

13. (Original) A structure of chalcogenide memory, comprising:

a semiconductor substrate;

a N+ epitaxy layer formed on the semiconductor substrate;

a N- epitaxy layer formed on the N+ epitaxy layer;

a first STI formed in the N+ and N- epitaxy layers to isolate a word line region;

a P+ doping region formed in the N- epitaxy layer;

a second STI formed in the N- epitaxy layer to isolate the P+ doped region;

a N+ doped region formed in the N- epitaxy layer and connected to the N+ epitaxy layer;

contact plugs formed on the N+ doped region and the P+ doped region respectively; and

an electrode formed on each contact plug, wherein the electrode includes a lower electrode, a chalcogenide layer and an upper electrode.

14. (Original) The structure as recited in claim 13, wherein the N+ epitaxy layer has a thickness of 400 to 600 angstroms.

15. (Original) The structure as recited in claim 13, wherein the N- epitaxy layer has a thickness of 800 to 1200 angstroms.

16. (Original) The structure as recited in claim 13, wherein the first STI is formed in the N+ epitaxy layer and the N- epitaxy layer.

17. (Original) The structure as recited in claim 13, wherein the first STI is formed by a dry or wet etching.

18. (Original) The structure as recited in claim 13, wherein the second STI is formed by a dry or wet etching.

19. (Original) The structure as recited in claim 13, wherein the N+ epitaxy layer is formed by selective epitaxial method.

20. (Original) The structure as recited in claim 13, wherein the N- epitaxy layer is formed by selective epitaxial method.